## REMARKS

Claims 9-12, 14-17 and 19-26 are pending in the application. Claims 21-26 are new and claims 9-12 and 16-17 are amended. Support for the amended and new claims can be found in the original disclosure, including at least paragraph 0063. Applicants reserve the right to pursue the original and other claims in this and in other applications.

The present invention, as recited in amended claim 9, relates, for example, to a superconducting wire, shown in Fig. 1A, which has at least one magnesium boride core wire. The wire also has a tubular shaped metal cladding layer (3) within which a superconductor material (5) is located. The metal cladding layer (3) has an electric resistance of 7 $\mu\Omega$ or less at room temperature. The superconducting wire also has a metal base member (2) that has a Vickers hardness of at least 50 at room temperature and surrounds the exterior of the tubular-shaped metal cladding layer (3). The superconducting wire has an intermediate layer (4) that operates as a junction auxiliary material and is arranged between the metal cladding layer (3) and the metal base member (2). The junction auxiliary material is electrically and mechanically unified and integrated with the metal base member (2) and the tubular-shaped metal cladding layer (3) in a unitary block. In addition, the junction auxiliary material contains at least one metal selected from a group including copper, silver, gold, palladium, aluminum, silicon, indium, tin, zinc, iron, lead, nickel, manganese and boron.

Claims 9, 10, 12, 14, 15, 17, 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Thieme in view of Yamada or Meyer. Claims 11 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Thieme in view of Yamada or Meyer and Liberman. Applicants respectfully traverse the rejection.

An important aspect of the invention of claim 9, as amended, is that "the junction auxiliary material is electrically and mechanically unified and integrated with the metal base member and the tubular-shaped metal cladding layer in a unitary block." None of the references disclose or suggest this. The Office Action relies upon the metal matrix of Thieme. However, Thieme merely teaches that "a metal matrix is comprised of copper or a copper alloy." [¶0016]. Thieme also teaches a

second high resistance metal layer located between the metal matrix and the alleged intermediate layer. *Id.* Finally, Thieme teaches a "metal laminate on the outer surface of the article." [¶0018]. Thus, Thieme does teach a layer between two other layers. However, the cited intermediate layer of Thieme does not have all of the claimed features of the intermediate layer of claim 9. For instance, Thieme fails to teach that its alleged intermediate layer "is electrically and mechanically unified and integrated with the metal base member and the tubular-shaped metal cladding layer in a unitary block." Thieme merely teaches that the entire assembly may be drawn, rolled or extruded. [¶[0024]. Drawing, rolling or extruding does not teach forming a "unitary block" as recited by claim 9.

Yamada and Meyer are relied upon by the Office Action as teaching forming a hole in the molded body and also fail to teach the cited limitation. Yamada teaches that superconductor materials inside a sheath may be caused to react when heated to form a continuous superconductor body. Col. 4, Lns. 15-24. That is, Yamada teaches that the superconductor material only becomes continuous with itself. Yamada fails to teach that the rest of the wire becomes unitary. Thus, Yamada fails to teach a "unitary block" as taught by claim 9. Meyer teaches that a heat treatment may be applied to the superconducting compound to form a "continuous strand" but similarly fails to teach a "unitary block" as taught by claim 9. Col. 6, Lns. 40-57.

Liberman is relied upon as teaching that a plurality of single-core wires are assembled into a base metal and are twisted. Liberman teaches that an intermediate layer "may be any suitable material to inhibit chemical interaction between the cladding material and the plurality of metallic wires or the coating material or the casing material." ¶[0189]. In another embodiment, Liberman teaches that "the process step 16F of drawing the second cladding diffusion welds the coating material and the wrapping material and the cladding material to form a substantially unitary first support with the multiplicity of fine metallic fibers contained therein." ¶[0311]. However, Liberman teaches that all of the coating and cladding layers are removed leaving the original wire to remain. ¶[0313]. Thus, Liberman teaches away from a superconducting wire in which "the junction auxiliary material is electrically and mechanically unified and integrated with the metal base member and the tubular-shaped metal cladding layer in a unitary block."

Accordingly, claim 9 is allowable. Independent claims 10, 21, 22 and 25 incorporate the limitations of claim 9 and are allowable for at least the reasons discussed above and on their own merits. Furthermore, claim 25 recites that the "intermediate layer is constructed from a tin alloy." None of the cited references disclose this. Applicants respectfully request the dependent claims be allowed along with the claims from which they depend.

Further, the dependent claims should be allowable for reasons in addition to those discussed above. With respect to claim 26, please note that in one embodiment of the invention a metal with a high hardness such as an iron alloy directly contacts the magnesium boride wire. In other words, no other material is between the iron alloy and the magnesium boride wire. This limitation is supported by at least paragraph 0090. The use of an iron alloy makes it easier to manufacture the superconducting wire because the higher hardness of the iron alloy is at the inner area of the wire and the lower hardness material, such as copper, is at the outer area of the wire.

In view of the above, Applicants believe the pending application is in condition for allowance.

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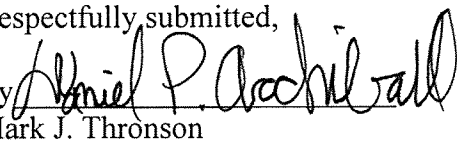
Respectfully submitted,

By 

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